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ABSTRACT

A copy of the policy statement on environmental education adopted by the New Hampshire State Board of Education. Included are a set of guidelines for the development of environmental education programs, and an annotated list of seven programs in existence in the state. Suggested steps for developing environmental study sites, and some possible interdisciplinary uses of such sites are given with references to appropriate publications. A list of people and agencies in New Hampshire that may be contacted by schools is provided, with the caution that students should have appropriate background information before asking for assistance and information. (AI)

ED049946

CURRICULUM BULLETIN #1

ENVIRONMENTAL EDUCATION
for
New Hampshire Elementary and Secondary Schools

"Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution."

-- William B. Stapp

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Division of Instruction
NEW HAMPSHIRE STATE DEPARTMENT OF EDUCATION
Concord

MARCH 1971

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FOREWORD

The purpose of this bulletin is threefold. First, to report on those environmental education programs in New Hampshire of which we are aware. Second, to encourage New Hampshire teachers to make use of the wide diversity of environmental study sites available to them. Third, to indicate resource people and agencies who are available to assist New Hampshire School Districts in planning for Environmental Education.

Environmental Education Instructional Activities (other than those related to the use of environmental study sites) are not included as each school will receive in the near future one of two publications containing suggested activities. These publications, Environmental Education Instructional Activities, K-6, and Environmental Education Instructional Activities, 7-12, have been prepared by New York's Environmental Task Force. They are being distributed by "Northeastern Environmental Education Developments", an E.S.E.A. Title V project which has brought together the State Education Departments of the six New England States, New York, New Jersey, and Pennsylvania.

Francis Houghton's "Open Letter on Water Testing and Water Pollution" is of particular interest. In this letter a representative of one of New Hampshire's resource agencies requests that we give our students appropriate background information before we have them contact resource people and agencies for assistance.

If I can be of any help to you as you plan for Environmental Education, please feel free to contact me.

William B. Ewert
Consultant, Science Education

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Policy Statement Relative to Environmental Education

Adopted by the New Hampshire State Board of Education,
January 13, 1971

The deterioration of the quality of our environment and of its ecological balance is proceeding rapidly. Technology and population continue to expand in alarming proportions with little concern for future implications. In sum, man threatens to destroy his habitat.

This deterioration is in part due to poor understanding of our environment and of the necessity for ecological balance. There is an increasing awareness of the need to protect and restore the environment from the unforeseen consequences of our individual and collective acts. Yet, more people must be made aware of this need, if we hope to influence practical decision making by government, industry and individual citizens. Therefore, we must educate everyone about the environment.

The State Board and the State Department of Education, in their role of responsibility for programs of education in the schools, recommend the development and implementation of Environmental Education programs which will assist students in developing an awareness of and a responsibility to the environment. Each school district in the State is encouraged to identify its own environmental problems and develop programs which seek to solve those problems. The personnel of the State Department of Education are available to assist local districts as they identify environmental problems, develop programs and plan for in-service education.

The following guidelines are suggested to assist local districts in developing Environmental Education programs:

1. An Interdisciplinary Approach. Environmental Education goes beyond the facts and processes of ecology. Our environmental problems are social, scientific, economic, cultural, and humanistic. Therefore, Environmental Education programs should make a deliberate effort to coordinate and involve all disciplines.

2. A K-12 Program. Environmental Education should be an integral part of the school curriculum and extend from elementary school through continuing education. In the elementary years children can be exposed to a variety of experiences that will contribute to their understanding of the environment and an appreciation of its beauty and value. At the secondary level students may become involved with community problems and those factors that affect the environment. Through continuing education, citizens can become better informed about current environmental problems and be motivated to solve such problems.

3. Process Orientation and Importance of Outdoor Classrooms. New Hampshire teachers and students have an extremely diversified and ac-

cessible selection of environmental study sites. These include mountains, forests, lakes and streams, the seashore, and the streets of our towns and cities. Environmental Education should provide direct experiences for students in such outdoor classrooms and expand those experiences to develop generalizations involving worldwide environmental phenomena. The data collected from the real environment provides the most accurate raw materials with which students can develop the skills and processes necessary for solving meaningful problems and for making intelligent decisions.

4. Attitudes and Values. Environmental Education is an extension of ethics and should modify attitudes and values to develop an environmental concern. This concern not only involves the individual and his personal interest but his interrelationships with others and society, even the survival of society.

5. A Cooperative Approach. Local school districts should make every effort to coordinate their activities with and take advantage of the assistance provided by the industries, businesses, and public and private agencies in New Hampshire that are concerned with the environment.

6. School System Responsibilities. School systems are encouraged to make the following conditions possible:

   A. Provide outdoor environmental study trips for real life experiencies such as: on-campus and off-campus walks to observe the natural environment, polluted and degraded areas, man-made environment, and industrial sites; and off-campus trips to science centers or resident outdoor education camps.

   B. Provide enabling facilities to conduct environmental studies such as adequate science classroom laboratories and outdoor environmental study sites.

   C. Provide in-service education to assist teachers and administrators in developing an environmental concern and to provide them with relevant environmental information and reliable classroom techniques.

   D. Provide continuous Environmental Education experiences K-12 which expand upon understandings, skills and attitudes that are based on maturity and growth.

   E. Provide opportunities for the involvement of students and teachers in individual and group activities and in action programs for the improvement of the local environment.

Environmental Education Programs in Operation in New Hampshire

One of the best methods for obtaining ideas and information about curriculum innovation is to visit schools that are doing something different. The following list of New Hampshire Environmental Education programs has been compiled with the hope that teachers interested in environmental education will visit the programs already in operation.

Squam Lakes Science Center, Holderness, New Hampshire 03245. Gilbert E. Merrill, Director. The Science Center is a non-profit corporation with a twofold function: 1) an out-of-doors museum for the general public in the summertime; and 2) a teaching instrument, designed to supplement the science curricula of northern New England schools during the school year. Now in its second full year of operation, the Center has developed thirteen ecology-oriented lecture-demonstrations for school groups. These lessons are designed to sharpen the students' awareness of his environment and its function, and to demonstrate how vitally important the things in it are to one another. In addition to his work with elementary and secondary school groups, Gilbert Merrill is conducting a series of workshops on Grade School Ecology for the teachers in the Lakes Region.

Monadnock Regional High School Nature Area Program, Swanzey Center, RFD #1, Keene, New Hampshire 03431. Emile Rocheleau, Director. The students of Monadnock Regional High School, under the supervision of Douglas Leslie, have developed the natural area surrounding their school into a nature study site. The area includes a river, fields, and woodlands.

Tilton School Water Pollution Program, Tilton School, Tilton, New Hampshire 03276. Philip Murphy, Coordinator. This program has been funded by the Ford Foundation and the Water Quality Office of the Environmental Protection Agency. Over the past two years over sixty teacher-student teams have been trained at Tilton in environmental studies. This group has also prepared "A Curriculum Activities Guide to Water Pollution and Environmental Studies". This comprehensive guide has been published and a limited number are available for distribution. Requests for the guide should be addressed to Philip Murphy. Teachers from seven New Hampshire schools have been trained at Tilton and are using this guide. They are from Brewster Academy in Wolfeboro, Belmont High School, Parker C. Hancock School in Franklin, Hanover Junior-Senior High School, Mascenic Regional High School in New Ipswich, Monadnock Regional High School in Swanzey Center, and the Tilton School in Tilton.

Environmental Studies Program, Dresden School District, Hanover Junior-Senior High School, Hanover, New Hampshire 03755. Ronald N. Bailey, Director of Environmental Studies. The purpose of this project is to accomplish curriculum change in the area of environmental education in the Dresden School District. At the elementary level, natural areas have been developed. However, the project's main emphasis has not been on develop-

ment but on how natural areas could and should be used in curriculum. In order to ensure maximum use of outdoor areas, teacher training has been given a high priority. All elementary teachers have been involved in at least one trip to their respective nature area. In addition, some elementary teachers have had more intensive training at a one-week summer workshop, financed partially by New Hampshire-Tomorrow, or by taking the School Environmental Education Course from Barbara Ragle Campbell and Dorcas Chaffee of the Regional Center for Educational Training.

Among the many curriculum changes at the junior-senior high school level are: a completely new junior high science program developed to emphasize environmental sciences; two social studies courses (11th and 12th grades) involving team field studies of selected local environmental problems; an English course examining man's relation to nature as viewed through literature; and an environmental chemistry course dealing with such research topics as stream analysis, sewage treatment, biodegradability, air pollution, and refuse disposal.

Mink Brook Study Project, Hanover Junior-Senior High School, Hanover, New Hampshire 03755. John E. Hutchins, Director. This project, funded by New Hampshire-Tomorrow, is designed to involve students (grades 8-12) and teachers in gathering data over several years concerning a natural brook eco-system and the effect of man's activities on that eco-system. It is hoped that this will "make real" for students both the complexity and the interrelationships in such a system. An additional objective of the study is to develop multi-disciplinary curriculum materials useful for the various levels of the school system or for independent studies.

Concord School Environmental Education Project (Concord SEE), Morrill School, 16 Rumford Street, Concord, New Hampshire 03301. (Miss) Edwina H. Czajkowski, Director. This project has been funded by New Hampshire-Tomorrow in an effort to provide New Hampshire with a model Environmental Education program. The project is directed by the Audubon Society of New Hampshire with full cooperation from the Concord Union School District. In addition, St. Paul's School has made the five hundred acres it owns around Turkey Pond available for use as an outdoor laboratory. The project's goal is to implement continuous environmental education--in an interdisciplinary manner--not as a separate subject. SEE maintains a resource center, publishes newsletters, organizes field trips, plans projects and is working to develop an environmental educational curriculum in each of Concord's schools.

Natural and Environmental Science Curriculum for Alvirne High School, Alvirne High School, Hudson, New Hampshire 03051. Wilbur H. Palmer, Director. This project has been funded by the Division of Vocational-Technical Education of the New Hampshire State Department of Education under the authority of The Vocational Education Amendments of 1968, P.L. 90-576. The purpose of this program is to train for effective citizenship those future citizens of the United States who are concerned about pollution. The program includes group dynamics and citizen action, as well as offering a curriculum in formal environmental science. The Alvirne

program is designed to include all students of all levels of training and calling who are interested in Pollution Control and the Environment. One of the program's main goals is to teach pupils how to participate and where to go with what they learn.

School Camping Programs. The term "school camping" refers to an extended classroom experience with the teacher and other adult instructors in a camp, usually for five school days. The school camping program enriches the curriculum of the classroom in an attempt to increase learning through planning, living, and working together in an outdoor situation. Social studies and science become more real to the pupils when a school camping experience provides motivation and actual learning situations for many of the subjects included in the schools' curriculum.

The experience is school-centered in social studies, science, health, conservation, nature, social and personal adjustment. The activities are broad in concept and adapted to the needs of the pupils. It is essential that the activities of the classroom for weeks before and after a school camping experience be related to outdoor education. The North Hampton, Newbury, Salisbury, Jaffrey, Rindge, Dublin, Peterborough, Antrim, Bennington, Hooksett, Wilton, Marlborough, Monadnock Regional, and Harrisville elementary schools are some of the New Hampshire schools that participate in school camping programs. This participation usually involves 5th and 6th grade students.

Any school desiring further information on school camping programs should contact one of the schools already participating in such programs or the Consultant, Science Education, New Hampshire State Department of Education.

Suggested Steps for Developing Environmental Study Sites

1. Establish an Environmental Study Site Committee.

   Select a key administrator or other school personnel to head the project.

   Possible committee members: landscape architect, land-use planners, the supervisor of buildings and grounds, teachers, P.T.A. representative and other interested members of the community, school board member, students and a representative of state and federal conservation agencies.

2. Collect Resource Materials.

   Set up a file of information on conservation and school ground planning.

   Get information on "existing" projects of a similar nature. Profit by their experience and improve upon it.

3. Enlist the aid of the United States Soil Conservation Service. (See page 14).

   The Service provides technical assistance through state and federal conservation agencies. The local representative of the United States Soil Conservation Service can provide soils information and basic land use planning; the local fish and game officer and waterway patrolman - wildlife information; the district forester - forest and water information. This assistance costs no money, places your land under no obligation and provides a basic planning tool in determining multiple-use needs.

4. Map and Inventory the Entire Site.

   Plot contours of the land to show slopes and swales.

   Record vegetation cover types and their distribution.

   Show streams, wet areas, rock outcrops and other natural features.

   Locate teaching stations.

   Locate possible vistas to show relationship of outlying terrain features and land uses.

   Plan a trail connecting the teaching areas. Urban areas may not have a woodland trail but resources need to be designated and a "trail" planned just as carefully.

   Do not overlook nearby areas which might be leased. Many times a low-cost, long-term lease can be obtained, thus economically enlarging the scope of the site. Easements should also be considered.

5. Review Inventory.

   Have inventory reviewed by resource individuals and groups - include conservationists, agency personnel, sportsmen's clubs, women's clubs, garden clubs, P.T.A. and service clubs.

6. Prepare a Detailed Long-Term Plan.

   The preparation of a step-by-step plan is essential. This plan should include specifications and cost figures.

   Develop a planting plan which includes the diminishing of items present in over-abundance and introduction of plants, flowers and trees to add variety and balance to the area.

   Develop plans for the creation of ponds and bogs, and the introduction of plants and fish.

Organize a trail system by having a main trail with loop trails leading off from it, e.g., geology, forestry, wildlife and/or aquatic loop trails.

7. Establish an Environmental Studies Curriculum Committee, one of whose members would be assigned responsibility for coordinating use of the Environmental Study Site.

8. Attempt to create an educational program of interest to adults as well as children - a Center for use by the entire community.

9. Use State Department of Education Curriculum Specialists to assist in establishing an In-Service Training Program for teachers, to insure that they learn how best to incorporate the new Environmental Study Site into their own disciplines.

10. Publicity.

Publicize the program - it will help to sell the idea. Resistance to this type of program usually comes from lack of information.

Some Interdisciplinary Uses of Environmental Study Sites

Use your Environmental Education Study Site effectively year-round in grades K-12.

Teacher training programs should be conducted for all teachers as a part of in-service training. Once teachers learn what is available on the site, they will use it.

The following is a brief outline of possible uses for different subjects:

Mathematics

Observe designs, shapes and patterns in nature.

Calculate soil erosion in a gully.

Measure tree diameter, circumference, radius, height and board feet.

Determine slope of land and differences in elevation.

Use a compass for orienting.

Construct a trail.

Language Arts

Keep a field notebook and record observations.

Develop a list of vocabulary words and their meaning.

Write poems and stories about the outdoors.

Find information in the library.

Plan the day's schedule.

Social Studies

Develop a conservation project.

Study the past and present economy of the area.

Explore local geography - hills, valleys, gullies, watersheds and streams.

Make and read maps.

Study the economics of land use.

Cemetary headstones are a source of historical information.

Measure minute climate variations in relation to slope, exposure, vegetation cover at various points, recording such factors as precipitation and air humidity, temperatures, evaporation and wind velocity.

Science

Study wildlife habits - homes, tracks, food, adaptations and shelter.

Explore ecological areas such as woodlands, fields, ponds, streams and learn the interrelationships of the plants and animals.

Identify trees and other plants.

Study the weather.

Test the soil for texture, acidity, compactness, water absorption, profile and nutrients.

Examine rocks and minerals for color, composition, hardness and origin.

Study astronomy.

Make aquatic studies.

Art and Music

Paint and sketch with natural colors using leaves, flowers, berries, charcoal or rocks.

Make collages and mosaics from native materials.

Weave with grasses and reeds.

Listen and record sounds of birds, streams, wind and trees.

Write songs.

Sing songs about the outdoors.

Use a camera.

Health and Physical Education

Dress properly for the outdoors.

Practice outdoor safety.

Make and play games with native materials.

Do some hiking.

Take a course in hunter safety.

Learn to shoot - skeet, trap, target or archery.

Go skiing.

Practice fly casting.

Industrial Arts

Design a product utilizing natural resources found on the school site, such as wood, bark, minerals, sand, gravel and water. Locate resources, decide on management, harvesting and extraction.

Study, identify, and manage a plantation of trees used by the furniture, lumber and paper industries.

In a unit on industrial design, design, produce and install signs and exhibits which will beautify the area and aid in the achievement of the school site's objectives.

Plan, lay out, construct and set up a manufacturing industry model to show relationships of industry to natural resources and markets.

Industrial Arts (Continued)

Prepare and install scale model exhibits of various mining methods.

Construct shelters, bridges, check dams, tables, fireplaces, birdhouses and feeders.

(With minor changes, from: School Site Development for Conservation and Outdoor Education, Pennsylvania State Department of Education.)

Some References on Environmental Study Sites

Man and His Environment: An Introduction to Using Environmental Study Areas, 1970. National Education Association, Publication-Sales Section, 1201 Sixteenth Street, N.W., Washington, D.C. 20036. Single copy $1.75. (Includes interdisciplinary instructional activities, information on site development and a list of selected publications and films.)

School Site Development for Conservation and Outdoor Education, Pennsylvania Department of Education, 1969. Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.

A Conservation Education Area to Enrich Your School, Joseph J. Shomon and Robert F. Holmes. New York State Conservation Department, Room 339, State Office Campus, Albany, New York 12226.

How to Lay Out a Nature Trail, LeRoy G. Irving. New York State Conservation Department, Room 339, State Office Campus, Albany, New York 12226.

A Nature Center for Your Community, Joseph J. Shomon. National Audubon Society, 1130 5th Avenue, New York, New York 10028.

Manual of Outdoor Conservation Education, Joseph J. Shomon. National Audubon Society, 1130 5th Avenue, New York, New York 10028.

Steps in Planning and Establishing a Nature Center, Bryon L. Ashbaugh. National Audubon Society, 1130 5th Avenue, New York, New York 10028.

Trail Planning and Layout, Byron L. Ashbaugh. National Audubon Society, 1130 5th Avenue, New York, New York 10028.

Developing the Self-Guiding Trails in The National Forests, M.P. 968, 1964. U. S. Department of Agriculture Forest Service, Washington, D.C. 20250.

Teaching Conservation Through Outdoor Education Areas, P.A. 837, 1968. U. S. Department of Agriculture Forest Service, Washington, D.C. 20250.

Some References on Environmental Study Sites (Continued)

The Community School Site-A Laboratory for Learning, NDEA, Title III, Bulletin 314. The Michigan Department of Education, Lansing, Michigan 48902.

The Explorable Instant or When to Open the Classroom Door, Phyllis S. Busch. Magazine Article in Nature Study, Winter 1966-67.

Natural Areas as School Conservation Education Aids, John W. Brainerd, Professor of Biology. American Nature Study Society, Springfield College, Springfield, Massachusetts 01109.

Outdoor Education in Connecticut, ESEA, III Office, Connecticut State Department of Education, P.O. Box 2219, Hartford, Connecticut 06115.

Natural Environment Awareness, Part 1: Using Urban Resources, Kingsley L. Greene. From the Magazine, The American Biology Teacher, November, 1967.

The Natural Interest in Natural Resources, George L. Fersh. From the Magazine, Grade Teacher, October, 1965.

The Need for Large School Sites, Richard W. DeRemer and B. G. Lauda. From: The School Board Journal, April, 1964.

Outdoor Education on Your School Grounds, May, 1968, Norman F. Marsh. The Resources Agency, Sacramento, California 95814.

Seven Steps for Developing an Outdoor School Area for Teaching Science-Conservation, Phyllis S. Busch. Project Spruce, operated through Title III, ESEA, Box 96A, Pine Plains, New York 12567.

Film

An Approach to School Site Development. International Film Bureau, Inc., 332 South Michigan Avenue, Chicago, Illinois 60604. Produced by William B. Stapp, Ph.D. and Spenser Havlick, M.N., Department of Conservation, School of Natural Resources of the University of Michigan. Available for loan, U. S. Forest Service, 6816 Market Street, Upper Darby, Pennsylvania 19082.

An Open Letter to New Hampshire Teachers on Water Testing and Water Pollution

With the current emphasis on, and interest in, ecological and environmental problems, it is only natural that students at all grade levels should wish to become involved in projects concerning these fields. Given an opportunity, they will seize on it because it is the "in" thing to do, and they feel that they can contribute in some small way to the improvement of the environment - or add to our knowledge of it.

This is very commendable and should be encouraged, but unfortunately many of the projects are doomed to failure (and their originators to disappointment) before they even get started. The reason is not hard to find - lack of background or basic information concerning the problem chosen for study. Many of them go to local, state, and federal agencies that they believe can help them, only to discover that the help they need just isn't available, or that their chosen "project" isn't of any purpose or value anyway. Most of them do not even know what "pollution" is.

In order to encourage this wide-spread interest and to make sure that some value is obtained from these projects, papers, and studies, it devolves on the teachers to see that some background information and guidance is given at the planning stages - before any work is attempted. This will forestall many of the problems which presently arise. (An example of what can happen was a group of 12-13 year-olds who appeared at the State Water Testing Laboratory with a substantial number of water samples gathered from many bodies of water on which they wanted a "pollution analysis". On questioning, it was found that they had no idea of what type of pollution was of interest - or even if it was chemical or bacterial. Since there are several thousand possible "pollutions" of natural water bodies, this is not a simple problem and obviously the laboratory could not be expected to run a screening or general analysis on such samples.) If these students had been given some instruction as to what "pollution" means, and what the reasons are for making any kind of a study, they would have been able to plan a practical program and would have saved themselves considerable unnecessary work and disappointment.

The State of New Hampshire is the only state that still runs water analyses for its citizens at no cost. However, this normally includes only a bacteriological examination and the basic physical and chemical determinations: turbidity, sediment, odor, color, pH (acidity), nitrate, nitrite, chloride, hardness, iron, copper and manganese. If requested, fluoride and lead are also determined, as are phosphates. Applications for FHA and VA loans require a check for the presence of detergents. Analyses for pesticides, mercury, etc. are only run in special cases and are not established as routine tests.

They are not part of a regular water analysis and must be arranged for in advance, since the staff and laboratory facilities are limited.

Pollution can be bacteriological or chemical - or both. If we are concerned with sewage, animal wastes, or other such contamination, all we need is a bacteriological examination, coupled with nitrate and chloride to establish its presence or absence. If we are looking for highway salt contamination, chloride and hardness (which is a measure of calcium and magnesium) are the only analyses necessary. Fertilizer contamination can be determined by looking for nitrate and ammonia, sulfate, or phosphate. Chemical plant effluents should be checked for products, by-products, or raw materials occurring in each individual plant. The effects of a known application of an insecticide or herbicide application in an area near a water body can be followed by analysis of the water, vegetation, or aquatic life in the water for that particular compound.

A special note in reference to mercury is in order here. Since New Hampshire has no industries using mercury or mercury compounds, there is no mercury detectable in its waters by ordinary means. The pesticides laboratory can detect such low concentrations (usually less than one part per billion), but the analysis has no value as it cannot be correlated with any source - only with the bottom sediment analyses. This analysis requires very sophisticated equipment and is not a simple one. Another fact of interest is that most of the mercury-polluted water bodies have been that way for some time and may be the result of deposits made up to 30 or 35 years ago.

It is my suggestion that teachers in any field which may involve environmental interest (from social science to physical science) give their students as much background information as possible to assist them in converting their creative energy into an educational and constructive force. It has been demonstrated many times that this energy can accomplish much of value if it is encouraged and properly channeled.

Very truly yours,

Francis D. Houghton
Pesticides Surveillance Scientist
New Hampshire Water Supply
and Pollution Control Commission

Resource People and Agencies in New Hampshire

Most of the agencies listed below are sources of free or inexpensive material on conservation, population, and/or ecology. These include publications, films, slides, exhibits, posters and curriculum guides. A few of these agencies will also supply speakers, resource personnel, and provide teacher training workshops. Most of the agencies will supply lists of the materials and services they provide.

A comprehensive list of New Hampshire agencies is contained in the "New Hampshire Conservation Directory". This directory is available at a cost of 50¢ from SPACE, Box 757, Concord, New Hampshire 03301 or from the Society for the Protection of New Hampshire Forests, 5 South State Street, Concord, New Hampshire 03301.

Air: Air Pollution Control Commission, Air Pollution Control Agency, 61 South Spring Street, Concord, New Hampshire 03301. (Tel. 271-2281)

Water: Water Supply and Pollution Control Commission, Prescott Park, 105 Loudon Road, Concord, New Hampshire 03301. (Tel. 271-3502)

Water Resources Board, State House Annex, Concord, New Hampshire 03301. (Tel. 271-3406)

Soil: Soil Conservation Service, United States Department of Agriculture, Federal Building, Durham, New Hampshire 03824. (The SCS also maintains an office in each county with technical field staff.)

Cooperative Extension Service, Taylor Hall, Durham, New Hampshire 03824. (Tel. 862-1520)
(The CES also maintains an office in each county. A county agricultural agent and county forester are located in each of the county offices.)

Belknap County, Laconia	(Tel. 524-1737)
Carroll County, Conway	(Tel. 447-5922)
Cheshire County, Keene	(Tel. 352-4550)
Coos County, Lancaster	(Tel. 788-4961)
Grafton County, Woodsville	(Tel. 747-2377)
Hillsborough County, Milford	(Tel. 673-2510)
Merrimack County, Concord	(Tel. 225-5505)
Rockingham County, Exeter	(Tel. 772-4711)
Strafford County, Rochester	(Tel. 332-5808)
Sullivan County, Claremont	(Tel. 543-3181)

Forest: United States Forest Service, Department of Agriculture, White Mountains National Forest, Box 638, Laconia, New Hampshire 03246. (Tel. 524-6450)

Cooperative Extension Service (See listing under Soil)

United States Forest Service, Department of Agriculture, Northeastern Forest Experiment Station, Box 640, Durham, New Hampshire 03824. (Tel. 868-5576)

Division of Resources Development, State Forestry Agency under Department of Resources and Economic Development, State House Annex, Concord, New Hampshire 03301. (Tel. 271-2215)

Parks: Division of Parks, Department of Resources and Economic Development, State House Annex, Concord, New Hampshire 03301. (Tel. 271-3254)
(Two parks have specific ecological units. One is the Nature Center at Bear Brook State Park, run in cooperation with the Audubon Society of New Hampshire. The other is the Monadnock Ecocenter, run in cooperation with the Society for the Protection of New Hampshire Forests.)

Lost River Reservation, North Woodstock, New Hampshire 03262.
(Owned by the Society for the Protection of New Hampshire Forests. Contains a natural history museum, a wildflower-nature garden, and a self-guiding nature trail).

Wildlife: New Hampshire Fish and Game Department, 34 Bridge Street, Concord, New Hampshire 03301. (Tel. 271-3422)
(Contact Chief of Information and Education.)

Minerals: Department of Resources and Economic Development, State House Annex, Concord, New Hampshire 03301.
(Tel. Division of Economic Development - 271-2343
Division of Resources Development - 271-2216)
(Will supply a list of available publications on mines, mining, and geological structure of the State.)

Educational: Otter Lake Conservation School, Greenfield, New Hampshire 03047. Wally Stone, Director. (Tel. 547-3412)
(Runs a school camping program.)

Regional Center for Educational Training, Wilson Hall, Hanover, New Hampshire 03755. (Tel. 643-4564)

Spruce Pond Camp, Bear Brook State Park, Allenstown, New Hampshire 03275.
(A youth conservation camp conducted annually by the Society for the Protection of New Hampshire Forests.)

Educational: (Continued)

Teachers-Adult Youth Leaders Conservation Camp, Cardigan Mountain A.M.C. Lodge, Alexandria, New Hampshire
(A workshop conducted annually by the Society for the Protection of New Hampshire Forests.)

Day Laboratory in Conservation, Outdoor Education and Field Science.
(An all day field trip to Bear Brook State Park conducted by the New Hampshire Society for the Protection of New Hampshire Forests for school groups on school days.)

Alvord Wildlife Sanctuary, Bear Island, Lake Winnipesaukee.
(A 250 acre sanctuary offering two courses in conservation education for conservation teachers, science teachers and camp counselors. Operated by the American Humane Education Association through Plymouth State College, Plymouth, New Hampshire.)

Appalachian Mountain Club, North Country System, North Country System Headquarters, Pinkham Notch Camp, Gorham, New Hampshire 03581. John B. Nutter, Co-ordinator of Environmental Education. (Tel. 466-3379)

Squam Lakes Science Center, Holderness.
(The Science Center's activities are described in the section of this booklet entitled Environmental Education in New Hampshire.)

New Hampshire State Department of Education, Room 410, State House Annex, Concord, New Hampshire 03301. William B. Ewert, Consultant, Science Education. (Tel. 271-3293)

General:

Society for the Protection of New Hampshire Forests, 5 South State Street, Concord, New Hampshire 03301. (Tel. 224-9945)

Audubon Society of New Hampshire, 63 North Main Street, Concord, New Hampshire 03301. (Tel. 224-1896)

New Hampshire Federation of Garden Clubs.
(Contact local club found in most New Hampshire communities).

New Hampshire Federation of Women's Clubs.
(Contact local club found in most New Hampshire communities).

New Hampshire Tuberculosis and Respiratory Disease Association, P.O. Box 1014, 456 Beech Street, Manchester, New Hampshire 03105. (Tel. 669-2411)

New Hampshire Division of Pesticides Control, State House Annex, Concord, New Hampshire 03301. (Tel. 271-3550)

General: (Continued)

New Hampshire Petroleum Council, 23 School Street, Concord, New Hampshire 03301. (Tel. 224-4097)

Town Conservation Commissions. (Located in 110 New Hampshire cities and towns.)

Home and Community Welfare Committees of Local Granges.

Local Rotary, Kiwanis and Lions Service Clubs.

Superintendents or Managers of Local Industries.

Some Selected National Agencies

U.S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Dept. of Interior, U.S. Post Office & Courthouse, Boston, Mass. 02109.

Clean Water, Washington, D.C. 20242.

Public Affairs Pamphlets, 381 Park Avenue South, New York, New York 10016.

Isaac Walton League of America, 1326 Waukegan Road, Glenview, Ill. 60025.

Sierra Club, Mills Tower, San Francisco, California 94104.

National Parks Association, 1701 18th Street, N.W., Washington, D.C. 20036.

National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C.20036.

Population Reference Bureau, 1955 Mass. Ave., N.W., Washington, D.C. 20036.

Zero Population Growth, 367 State Street, Los Altos, California 94022.

Planned Parenthood, World Population, 515 Madison Ave., New York, N.Y. 10022.

American Association of University Women, 2401 Virginia Ave., N.W., Washington, D.C. 20037.

Conservation Foundation, 1250 Connecticut Ave., N.W., Washington, D.C. 20036.

Project Man's Environment, National Education Association, 1201 16th Street, N.W., Washington, D.C. 20036.

Environment Magazine, 438 North Skinker, St. Louis, Missouri 63130.

Portland Center for Continuing Education, P.O. Box 1491, Portland, Oregon 97207. Attention: Mr. Lawless.

The Wilderness Society, 729 15th Street, N.W., Washington, D.C. 20005.

List of Environmental Education Bibliographies

Appendix 5 of "A Curriculum Activities Guide to Water Pollution and Environmental Studies, 1970". Available from: Philip Murphy, Coordinator, Tilton School Water Pollution, Program, Tilton School, Tilton, New Hampshire 03276. An annotated bibliography of core references, Government documents, periodicals, films and equipment.

Environmental Education for Everyone - Bibliography of Curriculum Materials for Environmental Studies, March 1970. Available from: The National Education Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036. 75¢ each. Stock No. 471-14600. This is a 36-page comprehensive bibliography. It includes programs in environmental education, curriculum guides, textbooks, experiments, enrichment readings, periodical listings, film strips, film lists, and other invaluable materials for environmental studies.

Conservation Education - A Selected Bibliography. The Interstate Printers and Publishers, Danville, Illinois, 1968. 98 pp. An annotated bibliography dealing with water and air pollution, population, and land conservation.

Programs in Environmental Education compiled by The National Science Teachers Association, 1970. Available from NEA Publications Sales, 1201 16th Street, N.W., Washington, D.C. 20036. $1.50 each. Stock No. 471-14394. A state-by-state listing of both local and ESEA, III funded environmental education programs.

Environmental Education Bibliography,prepared by The Massachusetts Audubon Society for the United States Office of Education. Available in three sections:

Section I - For Pre-School-Grade 3
Section II - For Grades 4-6
Section III - For Grades 7-9

From: Margaret McDaniel, Librarian, The Massachusetts Audubon Society, South Great Road, Lincoln, Massachusetts 01773. Each section costs 50¢. Annotated bibliographies of curriculum materials, films, graphics, recordings, books for students and books for teachers, (includes both activity guides and background reading).

How Can Our Physical Environment Best Be Controlled and Developed? A collection of excerpts and bibliography relating to the high school debate topic, 1970-1971. Compiled by The Legislative Reference Service of the Library of Congress. Available from: The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price $1.00.

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